From: Doug Wight (Generation - 34) [/O=DOMINION/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=DOUGLA7]
Sent: 7/22/2015 7:46:48 PM
To: Matthew M Woodzell (Generation - 3) [/O=DOMINION/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Matt040]
CC: Doug Wight (Generation - 34) [/O=DOMINION/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Dougla7]
Subject: FW: Possum Point - Oil Water to Metals Pond & Pond D Evaluation
Attachments: RE: 8GN Type Pump - Serial No. N-26357; O&M-26357.pdf; PUMP SYSTEM CURVE CALC_No. 4.xlsx; PUMP SYSTEM CURVE CALC_No. 5.xlsx

Matt,

At a quick glance, everything seems to be reasonable. I don't know what the lift is at the pump, so 80 psig at the #5 pump discharge would be reasonable. Just a gut check, 1400 gpm is quite high for a min flow on a 1700 gpm pump. Typically we operate down to 20% (340 GPM) before we start seeing cavitation and vibration. I did question GAI's reason for adding the extra head to go to D pond when we're going through an open top Frac tank feeding the booster pump.

In the end, I think the pumps from both #4 and #5 lift stations will move up on their curves when combined with the ABC pumps, but should be fine. You will probably want to manually start a pump from either location, one at a time, while Glover (Whitey) watches the discharge of their pumps. Check for abnormal vibration or cavitation noises.

Let me know if you have any questions,

Doug

From: John DeBarbieri [mailto:J.DeBarbieri@gaiconsultants.com]
Sent: Wednesday, July 22, 2015 4:54 PM
To: Doug Wight (Generation - 34); Scott Quinlan; Matthew M Woodzell (Generation - 3)
Cc: Jeffrey R Marcell (Generation - 3); John Klamut; Adam Scheller; Michael A Glagola (Generation - 34)
Subject: RE: Possum Point - Oil Water to Metals Pond & Pond D Evaluation

Doug,

Our analysis of No. 5 Lift Station Pump suggests that a TDH of 182-ft or 79-psi would be about at the minimum recommended flow of 1,400-gpm (see attached email from manufacturer rep); assuming the head characteristics of the pump are consistent with the performance curve in the attached O&M Manual.

With this in mind, if the pressure increases about 5-psi more than what you normally experience (when pumping to Pond E) you may be at or below the minimum continuous stable flow recommended by the manufacturer. I assume the pressure transmitter or visual gauge is near the pump discharge.

I also looked briefly at using No. 4 Lift Station pump and that seemed to be much more doable. Unless there is something I am missing, it appears that you throttle a valve quite a bit when using the No. 4 Lift Station pump to only pump 400-gpm.

The calculations are attached.

Sincerely,

John D. DeBarbieri, PE
Senior Project Engineer

GAI Consultants, Inc.
385 East Waterfront Drive, Homestead, PA 15120-5005

412.476.2000 ext. 1580 |

CONFIDENTIALITY NOTICE: This communication contains confidential information belonging to the sender and may be legally privileged. This communication is solely for the use of its intended recipient. If you are not the intended recipient, inform the sender of the error and remove this email from your system. If this transmission includes any technical information, design data, and/or recommendations, they are provided only as a matter of convenience and may not be used for final design and/or construction.

-----Original Message-----

From: Doug Wight (Generation - 34) [mailto:doug.wight@dom.com]

Sent: Monday, July 20, 2015 9:48 AM

To: Scott Quinlan; Matthew M Woodzell (Generation - 3)

Cc: Jeffrey R Marcell (Generation - 3); John Klamut; John DeBarbieri; Adam Scheller; Michael A Glagola (Generation - 34); Doug Wight (Generation - 34)

Subject: RE: Possum Point - Oil Water to Metals Pond & Pond D Evaluation

John DeBarbieri,

What would be useful is to have a maximum pump discharge pressure (in PSIG) that the plant can monitor, since they will not have a flow indication.

Thank you for your analysis,

Doug

-----Original Message-----

From: Scott Quinlan [mailto:s.quinlan@gaiconsultants.com]

Sent: Monday, July 20, 2015 9:40 AM

To: Matthew M Woodzell (Generation - 3)

Cc: Doug Wight (Generation - 34); Jeffrey R Marcell (Generation - 3); John Klamut; John DeBarbieri; Adam Scheller

Subject: RE: Possum Point - Oil Water to Metals Pond & Pond D Evaluation

Excellent - thanks Matthew!

Scott

-----Original Message-----

From: Matthew M Woodzell (Generation - 3) [mailto:matthew.m.woodzell@dom.com]

Sent: Monday, July 20, 2015 9:10 AM

To: Scott Quinlan

Cc: Doug Wight (Generation - 34); Jeffrey R Marcell (Generation - 3); Matthew M Woodzell (Generation - 3); John Klamut; John DeBarbieri; Adam Scheller

Subject: FW: Possum Point - Oil Water to Metals Pond & Pond D Evaluation

Matthew Woodzell

Supervisor Power Generation Technical Support Possum Point Power Station

Phone: (703) 441-3934

Mobile: (804) 912-4185

Tie: 8-795-3934

Matthew.M.Woodzell@dom.com

-----Original Message-----

From: Samantha M Goodwill (Generation - 3)

Sent: Monday, July 20, 2015 8:26 AM

To: Matthew M Woodzell (Generation - 3)

Subject: RE: Possum Point - Oil Water to Metals Pond & Pond D Evaluation

Matt,

5A serial number N-26357 (on the Hazleton Pump name plate) 5B Serial number N-25176 (on the Johnston Pump Company name plate)

They are at elevation 35 according to SAP. It is pretty close to that, because the ash piping leading away from it is at el 33.75, and the ash piping is about a foot underground.

Thanks,

Sam

-----Original Message-----

From: Matthew M Woodzell (Generation - 3)

Sent: Monday, July 20, 2015 7:37 AM

To: Samantha M Goodwill (Generation - 3)

Subject: FW: Possum Point - Oil Water to Metals Pond & Pond D Evaluation

Please chase down the serial number and elevation of the pump below.

Matthew Woodzell

Supervisor Power Generation Technical Support Possum Point Power Station

Phone: (703) 441-3934

Mobile: (804) 912-4185

Tie: 8-795-3934

Matthew.M.Woodzell@dom.com

-----Original Message-----

From: Scott Quinlan [mailto:s.quinlan@gaiconsultants.com]

Sent: Monday, July 20, 2015 6:51 AM

To: Michael A Glagola (Generation - 34)

Cc: Doug Wight (Generation - 34); Jeffrey R Marcell (Generation - 3); Matthew M Woodzell (Generation - 3); John Klamut; John DeBarbieri; Adam Scheller

Subject: FW: Possum Point - Oil Water to Metals Pond & Pond D Evaluation

Mike:

As stated below, we believe that the pumps in pump station #5 will be sufficient to pump against the flows generated by Glover. However, we do have to confirm with the manufacturer the minimum continuous stable flow of the pump. The serial number of the pump would prove helpful. We will also confirm some elevations at pump station # 5 with the station. We can talk further today on our follow-up call.

Sincerely,

Scott C. Quinlan, PE

Director - Energy Water Resources Engineering and Planning

GAI Consultants, Inc.

500 Cranberry Woods Drive, Cranberry Township, PA 16066

724.772.2011 ext. 2409 | C 412.584.4508 |

CONFIDENTIALITY NOTICE: This communication contains confidential information belonging to the sender and may be legally privileged. This communication is solely for the use of its intended recipient. If you are not the intended recipient, inform the sender of the error and remove this email from your system. If this transmission includes any technical information, design data, and/or recommendations, they are provided only as a matter of convenience and may not be used for final design and/or construction.

From: John DeBarbieri

Sent: Friday, July 17, 2015 5:27 PM

To: Scott Quinlan; Adam Scheller

Subject: Possum Point - Oil Water to Metals Pond & Pond D Evaluation

Scott,

Regarding the evaluation of the existing ash sluice line and the No. 5 Lift Station pump:

We estimated that Glover could pump up to 3,600-gpm of Ponds A, B, and C waters to the Metals Cleaning Waste Treatment Facility (Metals Pond) while accommodating 400-gpm of oil water from No. 5 Lift Station.

Similarly, we estimated that Glover could pump up to 1,400-gpm of Ponds A, B , & C waters if the ash sluice line was extended from the Metals Pond to Pond D.

Our assumptions are as follows:

1. 200-gpm of Pond E well point waters are being pumped at the same time.

2. Static head is 20-ft to Metals Pond and 120-ft to Pond D.

3. Minor losses are 10% of the total friction losses.

4. Pipe I.D. is based on SCH40 steel pipe; except from fenceline and beyond 1" of cement mortar lining is added, reducing I.D. accordingly.

5. Pipe C-value is for old pipe, i.e., 100.

6. Pipe lengths are per attached email from No. 5 Lift Station to fenceline.

7. Pump performance curve is the Hazelton Pump Model 8GN, 19.75-in Impeller, 1185-rpm curve based on the attached email.

8. A single No. 5 Lift Station pump is operational.

Please note that the 400-gpm operating point for the No. 5 Lift Station pump is 23%± of the design operating point. Depending on the manufacturer's recommended minimum continuous stable flow for the pump, this may also be unacceptable. We can refine the numbers and issue full calculations if desired.

Sincerely,

John D. DeBarbieri, PE

Senior Project Engineer

GAI Consultants, Inc.

385 East Waterfront Drive, Homestead, PA 15120-5005

412.476.2000 ext. 1580 | [cid:image002.png@01D0C0B5.DB827D40]
<http://www.facebook.com/gaiconsultants> [cid:image004.png@01D0C0B5.DB827D40]
<https://twitter.com/GAIConsultants> [cid:image006.png@01D0C0B5.DB827D40]
<https://www.youtube.com/user/gaiconsultants> [cid:image008.png@01D0C0B5.DB827D40]
<https://www.linkedin.com/company/gai-consultants-inc.> [cid:image009.png@01D0C0B5.DB827D40]
<http://gaiconsultants.com/corporate_blog/index.php>

[cid:image010.png@01D0C0B2.AE49FAE0]

CONFIDENTIALITY NOTICE: This communication contains confidential information belonging to the sender and may be legally privileged. This communication is solely for the use of its intended recipient. If you are not the intended recipient, inform the sender of the error and remove this email from your system. If this transmission includes any technical information, design data, and/or recommendations, they are provided only as a matter of convenience and may not be used for final design and/or construction.

CONFIDENTIALITY NOTICE: This electronic message contains information which may be legally confidential and or privileged and does not in any case represent a firm ENERGY COMMODITY bid or offer relating thereto which binds the sender without an additional express written confirmation to that effect. The information is intended solely for the individual or entity named above and access by anyone else is unauthorized. If you are not the intended recipient, any disclosure, copying, distribution, or use of the contents of this information is prohibited and may be unlawful. If you have received this electronic transmission in error, please reply immediately to the sender that you have received the message in error, and delete it. Thank you.

CONFIDENTIALITY NOTICE: This electronic message contains information which may be legally confidential and or privileged and does not in any case represent a firm ENERGY COMMODITY bid or offer relating thereto which binds the sender without an additional express written confirmation to that effect. The information is intended solely for the individual or entity named above and access by anyone else is unauthorized. If you are not the intended recipient, any disclosure, copying, distribution, or use of the contents of this information is prohibited and may be unlawful. If you have received this electronic transmission in error, please reply immediately to the sender that you have received the message in error, and delete it. Thank you.